



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,969	01/28/2004	Kazuhito Ichihara	1924.69229	4322
7590	09/26/2006			EXAMINER ALPHONSE, FRITZ
Patrick G. Burns, Esq. GREER, BURNS & CRAIN, LTD. Suite 2500 300 South Wacker Dr. Chicago, IL 60606			ART UNIT 2133	PAPER NUMBER
DATE MAILED: 09/26/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/766,969 <i>F.A.</i>	ICHIHARA ET AL.	
	<b>Examiner</b> Fritz Alphonse	<b>Art Unit</b> 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 28 January 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,6-9 and 13-17 is/are rejected.
- 7) Claim(s) 2-5 and 10-12 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 6-9, 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyer (U.S. Pat. No. 7,055,081) in view of Ichihara (U.S. Pat. No. 7,031,090).

As to claim 1, Boyer (figs. 2-3) discloses an apparatus for reading a recording medium, including a determining unit that determines whether an error detected by using an error correcting code is correctable with respect to a signal sequence read from the recording medium (col. 2, lines 27-57).

Boyer differs from claim 1 in that he does not specifically disclose a decoding unit that performs maximum a posteriori decoding of the signal sequence upon the determining unit determining that the error is not correctable.

However, in the same field of endeavor, Ichihara discloses an information recording and reproducing apparatus including a decoding unit that performs maximum a posteriori decoding of the signal (col. 4, lines 29-48; fig. 13).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Boyer's system with the information recording and reproducing apparatus, as disclosed by Ichihara. Doing so would provide information recording and reproducing apparatus and a signal decoding circuit, in which noise characteristics of a magnetic

recording and reproducing channel are accurately converted into a model and the characteristics of the noise model are efficiently applied to a decoding step, thereby improving decoding performance.

As to claim 6-8, 18-20, Boyer does not explicitly disclose a decoding unit includes a noise estimate Viterbi decoding unit that performs a Viterbi decoding using channel information based on a channel signal characteristic and a channel noise characteristic, wherein the decoding unit performs maximum likelihood decoding of the signal sequence by Viterbi decoding. In addition, Boyer does not teach an error correcting code which is a Reed-Solomon code

However, the limitations are obvious and well known in the art, as evidenced by Ichihara (col. 4, lines 66 through col. 5 line 17; col. 10, lines 13-31). See the motivation for the same reason disclosed in claim 1 above.

As to claims 9 and 13-16, the claims have substantially the limitations of claims 6-8; therefore they are analyzed as previously discussed in claims 6-8 above.

As to claim 17, Boyer differs from claim 1 in that he does not specifically disclose a correcting unit that detects an error by using the error correcting code with respect to the signal sequence, and corrects the detected error; and a checking unit that checks whether the error correction by the correcting unit is correct.

However, the limitations are obvious and well known in the art, as evidenced by Boyer (col. 2, lines 27-57).

***Allowable Subject Matter***

3. Claims 2-5, 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks, Washington, D.C. 20231

**or faxed to:** (703) 872-9306 for all formal communications.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fritz Alphonse, whose telephone number is (571) 272-3813. The examiner can normally be reached on M-F, 8:30-6:00, Alt. Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert De Cady, can be reached at (571) 272-3819.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Information regarding the status of an application may also be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 2133

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Fritz Alphonse

Art Unit 2133

September 15, 2006



GUY LAMARRE  
PRIMARY EXAMINER